

## ANTIBIOTICS COMMONLY USED IN THE TREATMENT OF ACUTE OROFACIAL BACTERIAL INFECTIONS IN GENERAL DENTAL PRACTICE IN DELTA STATE OF NIGERIA.

<sup>1</sup>Okagbare T. E. and <sup>2</sup>Emudianughe T. S.

<sup>1</sup>Department of Preventive Dentistry and <sup>2</sup>Department of Pharmacology and Therapeutics, College of Health Sciences, Delta State University, Abraka, Nigeria.

### ABSTRACT

Information on acute orofacial bacterial infections and the antibiotics commonly used in their management in general dental practice in Delta State, was obtained by reviewing a total of some 300 case records, randomly selected from five hospitals in Delta State. The following bacterial infections: acute dento-alveolar abscess, lateral periodontal abscess, post-extraction infection (dry socket), pericoronitis, acute ulcerative gingivitis (AUG), cellulitis and suppurative sialadenitis were investigated; and the estimates of the number of each type of infection in the five hospitals were found to be similar. Four different antibiotics – ampicillin, penicillin, metronidazole and erythromycin were mostly prescribed, in a variety of regimens for the treatment of orofacial bacterial infections in these hospitals. Majority of patients 138-186(46-62%) received a 5-day course of ampicillin (250-500mg, qid) for bacterial conditions other than AUG, for which 3 days of metronidazole (200-400mg tid) was mostly prescribed 22(91.7%). However cellulitis was treated initially or all the way with 300 to 600 mg (0.5 to 1.0 mega units) i.m. or i.v., 6 hourly benzylpenicillin, sometimes in combination with metronidazole.

**KEYWORDS:** Orofacial bacterial infections, Antibiotics, General dental practice, Delta State.

### INTRODUCTION

In the treatment of dental infections phenoxymethylpenicillin has traditionally been regarded as the antibiotics of choice all over the world, with erythromycin as an alternative for patients with known hypersensitivity to penicillins (Chow *et al*). In Delta State ampicillin is the most commonly prescribed, contrary to the above general impression, with erythromycin also as an alternative for patients with known hypersensitivity to penicillins. Ampicillin injection is sometimes given in a stat. dose of 0.5g followed by oral doses. Where penicillin was prescribed, it was either benzylpenicillin i.m. or i.v. or procaine penicillin i.m. only.

The aim of the present study is to obtain information about patterns of acute orofacial infection among patients attending general dental surgeries in Delta State, and to gain information on which antibiotics are mostly prescribed for their treatment.

Table 1 Types / number of acute orofacial infections reviewed per hospital

	DSC hospital	Central hospital Warri	Central hospital Sapele	Central hospital Agbor	Federal Medical Centre Asaba	Total
Bacterial infection						
Acute dento-alveolar abscess	24	25	25	24	24	122
Pericoronitis	14	13	13	15	15	70
Lateral periodontal abscess	7	5	7	6	7	32
Post-extraction infection	5	7	6	6	5	29
Acute ulcerative gingivitis	5	4	6	4	5	24
Cellulites	4	4	2	4	3	17
Salivary gland infection	1	2	1	1	1	6
Total	60	60	60	60	60	300

## MATERIALS AND METHOD

One research assistant was recruited for this study and five hospitals were involved. The hospitals are Delta Steel Company Hospital, Orhuwhorun – Warri; Central Hospital Warri; Central Hospital Sapele; Central Hospital Agbor and Federal Medical Centre, Asaba all in Delta State of Nigeria. The case records of some 60 randomly selected patients treated with antibiotics for orofacial bacterial infections in each of the hospitals over a period of two to three months were reviewed, adding up to a total of 300. The antibiotics prescribed for the treatment of the following bacterial infections: acute dento-alveolar abscess, lateral periodontal abscess, post-extraction infection (dry socket), pericoronitis, acute ulcerative gingivitis (AUG), suppurative sialadenitis (salivary gland infection) and cellulitis were recorded. Also recorded were the prescribed antibiotic regimen (drug, dose and duration).

## ANALYSIS

The percentage of the number patients administered with each of the antibiotics and the durations prescribed for each antibiotic were generated and compared.

## RESULTS

Four different antibiotics were commonly prescribed as the drug of first choice for the treatment of orofacial bacterial infections-ampicillin, penicillin, metronidazole and erythromycin. A total of 300 cases of bacterial infection were reviewed in this study. The number of cases of infection per hospital is recorded in

Table 1 and it shows that the estimates of the number of each type of infection were similar in all the five hospitals. The acute conditions which appeared most frequently were dento-alveolar abscess 122 (40.7%) and pericoronitis 70 (23.3%). Suppurative salivary gland infection was very uncommon 6 (2%). Majority 138-186 (46-62%) of the patients received ampicillin for all conditions other than AUG, for which most 22(91.7%) patients received metronidazole (Table 2). The duration of drug therapy was variable, being either 3, 5 or 7 days (Table 2). A 5-day course was prescribed for all infections, with the exception of AUG, for which 3 days of therapy was prescribed most frequently 11 (45.8%).

Table 2 Antibiotic of choice and duration of therapy for the treatment of acute orofacial infection

	Antibiotic Prescribed, %				Duration prescribed, %		
	Amp	Pen	Metr	Eryth	3 days	5 days	7days
Acute infection							
Acute dento-alveolar abscess	69	13	9	9	5	91	4
Lateral periodontal abscess	63	11	19	7	8	89	3
Post-extraction infection	63	6	21	10	7	82	6
Pericoronitis	58	4	32	6	10	81	9
Acute ulcerative gingivitis	5	1	92	2	46	44	10
Salivary gland infection	41	10	38	11	2	88	10
Cellulitis	6	91	2	1	69	26	5

Key: ampicillin (Amp), Penicillin (Pen), metronidazole (Metr), erythromycin (Eryth)

## DISCUSSION

The infections reviewed in this study have characteristic clinical presentations and diagnosis can therefore usually be made by clinical examination and history. None of the diagnosed infections were proven microbiologically, since it is not a normal practice in general dental situation to make use of diagnostic microbiological laboratories. Therefore, the information reported here should be regarded as reasonable estimates and not taken as actual incidences of each type of infection.

Some microbial studies have revealed a predominance of strict anaerobes in acute dento-alveolar abscess (Williams *et al* 1983, Lewis *et al* 1986); a majority of which are penicillin-resistant strain of *Bacteriodes* species (Heimdahl *et al* 1980). These findings have given rise to recommendations for the use of antibiotics such as metronidazole (Ingham *et al* 1977), cephalosporins (Cumming *et al* 1980) or clindamycin (Schuen *et al*). Clindamycin appears to be more effective against infections involving the bone or fractures,

although it is recommended that its usage should be restricted, unless specifically indicated by bacterial culture, due to the possibility of inducing colitis (Mehrohof *et al* 1976).

Of the drugs prescribed for bacterial infection, three agents (ampicillin, penicillin and metronidazole) accounted for the vast majority (85-97%) of first antibiotics of choice. The popularity of ampicillin here is probably based on the fact that it is easily available, cheap and effective against the majority of bacteria encountered in acute dental infections, and adverse reactions are rare. A high-dose of penicillin regimen was always the treatment of choice for cases of cellulitis like Ludwig's Angina for which 600 to 1200mg (1 to 2 mega units) benzylpenicillin i.m. or i.v. 6 hourly is commonly prescribed. Metronidazole was the most frequently prescribe agent for AUG and second most frequently prescribed agent for the treatment pericoronitis. This is to be expected since metronidazole, which is only effective against strict anaerobes, has been shown to perform well in the treatment of both these conditions. The low incidence of the use of metronidazole for the treatment of acute dento-alveolar abscess is perhaps surprising, because it has been shown that strict anaerobes predominate and are the most likely pathogens in this infection (Lewis *et al* 1986, 1988). In addition, metronidazole and a closely related drug ornidazole have been shown to be effective clinically in the treatment of acute dental abscess (Ingham *et al* 1977, von Konow *et al* 1983).

In this study, the duration of therapy varied from 3 to 7 days, with a 5-day regimen being most popular, apart from the 3-day course of therapy employed (46%) in the management of AUG. It has been recommendation that therapy should be continued for 2 days after resolution of infection. Historically, these duration times may have been adopted due to the fear of encouraging the emergence of resistant bacteria. However, it has been suggested more recently that the use of antibiotics beyond the time of clinical improvement encourages the emergence of resistance bacterial forms rather than reducing it (Lacey *et al* 1984).

The present study has revealed that these four antibiotics, in a variety of regimens, are being used successfully in the management of acute orofacial infections in general dental practice in Delta State of Nigeria. However, it is important that patients who failed to respond to present treatment options or present with unusual clinical signs be recognized, since this may indicate an underlying systemic disease. This is particularly relevant with the prevalence of patients suffering from HIV/AIDS.

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Corresponding Author:

Dr. T. E. Okagbare

Department of Preventive Dentistry, College of Health Sciences, Delta State University, Abraka, Nigeria.

E-mail:tuweyire@yahoo.com